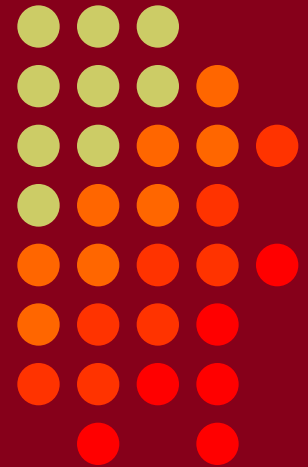


Tips to Improve Your FT8/4 Contest Performance

Ed Muns, W0YK / P49X



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Three Major FT Contests

ARRL RTTY Roundup [1st weekend in Jan]

- 2019: FT8 added
- 2020: FT4 added
- 2022: RTTY-only or FT-only or Mixed
- 2023: RTTY-only; no other modes

1. ARRL International Digital [1st weekend in Jun (2022)]

- Distance-based scoring

2. WW Digi DX Contest [last weekend in Aug (2019)]

- Same as ARRL Int'l Digital:
 - plus Grid multipliers
 - minus 160m and 6m

3. FT Challenge [1st weekend in Dec (2018)]

- Standard daily exchange → *transparent contest*



FT

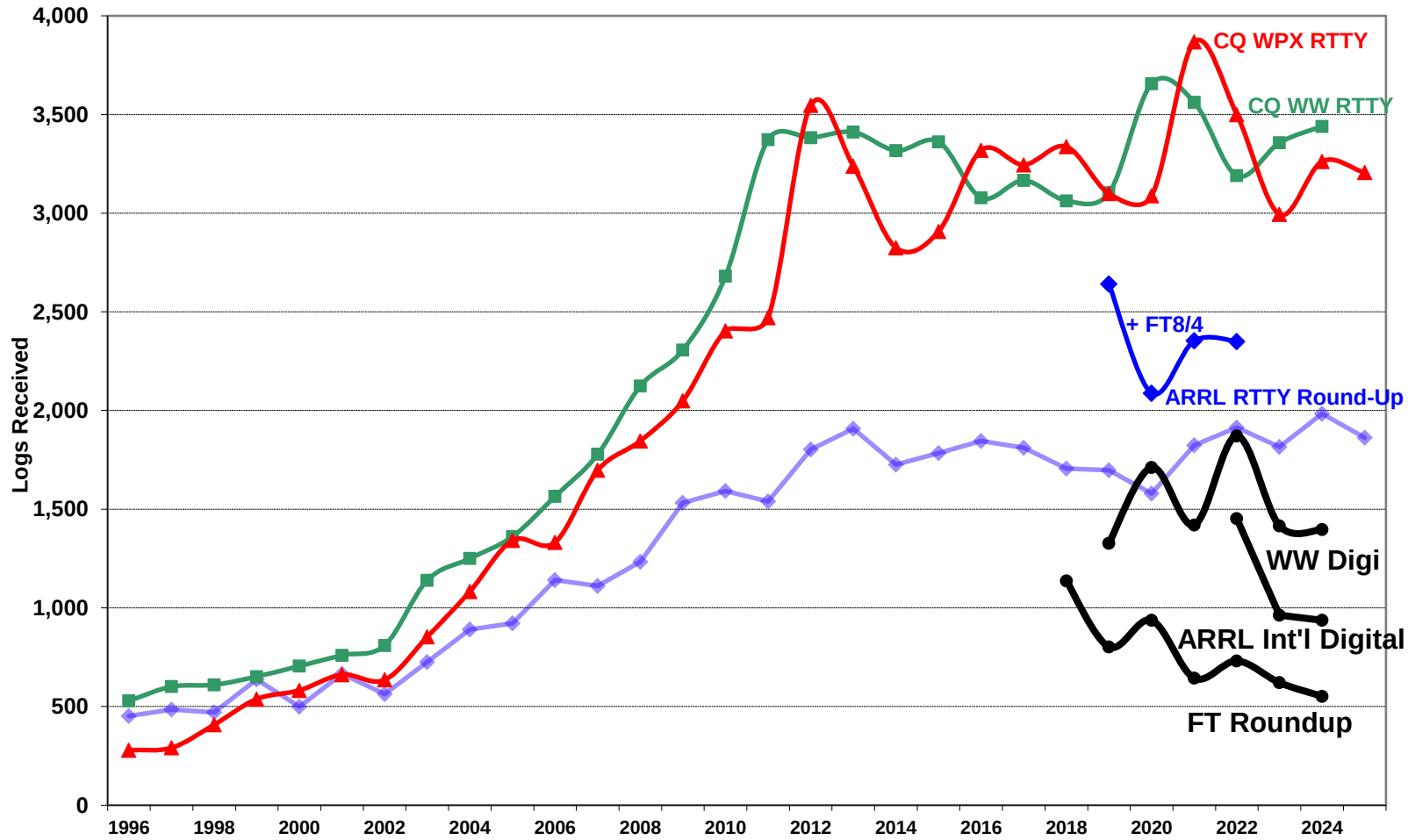
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2/26
15 May 2025

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Three Largest FT4/8 Contests





FT8 Software

- **WSJT-X**
- **Derivatives:**
 - **WSJT-X Improved**
 - **JTDX**
 - **MSHV**
 - **DigiRite (WriteLog only)**
 - **WSJT-Z**
 - **JS8Call (conversational; non-contest)**

WW Digi QSO

60-75 sec./QSO
30 sec./rolling QSO



- CQ WW K1ABC FN42
- W9XYZ K1ABC R-FN42
- ← W9XYZ may want 73
- K1ABC W9XYZ EM05
- K1ABC W9XYZ RR73
- ←^{repeat} K1ABC W9XYZ RR73

WW Digi QSO

60-75 sec./QSO
30 sec./rolling QSO



QSO period 1
QSO period 2

- CQ WW K1ABC FN42
- W9XYZ K1ABC R-FN42
(implicit “CQ” for others)
- W0YK K1ABC R-FN42
(implicit “2nd QSL” for W9XYZ) ← W9XYZ may want 73
- K1ABC W9XYZ EM05
- K1ABC W9XYZ RR73
K1ABC W0YK CM97
- K1ABC W0YK RR73 ←^{repeat} K1ABC W9XYZ RR73
- ← W0YK may want 73
- ←^{repeat} K1ABC W0YK RR73

WW Digi QSO

60-75 sec./QSO
30 sec./rolling QSO



QSO period 1
QSO period 2
QSO period 3

- CQ WW K1ABC FN42
- W9XYZ K1ABC R-FN42
(implicit “CQ” for others)
- W0YK K1ABC R-FN42
(implicit “2nd QSL” for W9XYZ) ← W9XYZ may want 73
(implicit “CQ” for others)
- P49X K1ABC R-FN42
(implicit “2nd QSL” for W0YK) ← W0YK may want 73
- P49X K1ABC 73
(superfluous 2nd QSL)
- K1ABC W9XYZ EM05
- K1ABC W9XYZ RR73
K1ABC W0YK CM97
- K1ABC W0YK RR73
K1ABC P49X FK52 ← repeat K1ABC W9XYZ RR73
- K1ABC P49X RR73 ← repeat K1ABC W0YK RR73

Tips



- Time Synchronization
- Split Receive
- Deep Decode
- Sub-Band Choices
- Rotate Cycles & Modes
- Fill Protocol
- Minimixzing NILs
- FT8 vs. FT4

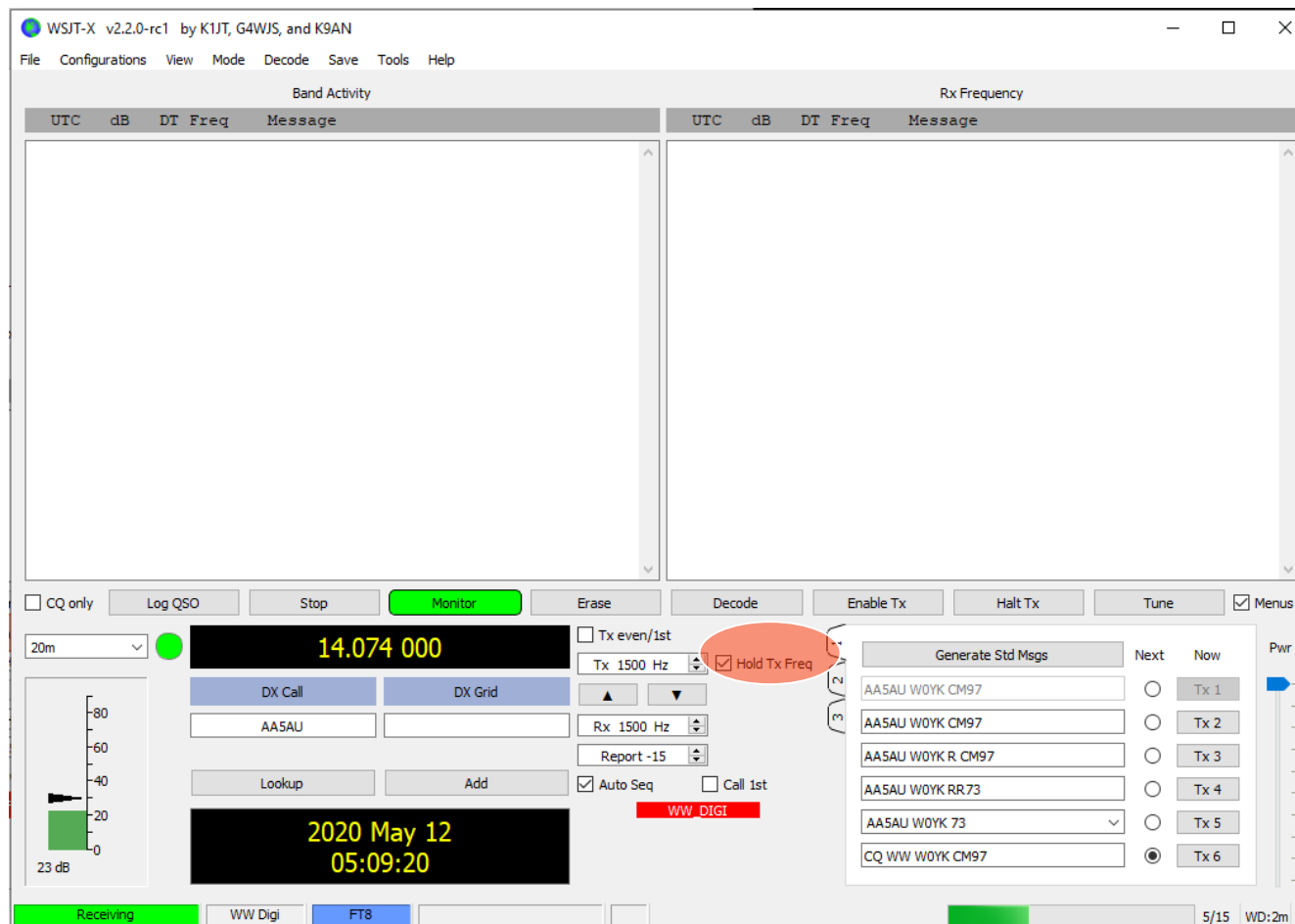
Time Synchronization

mandatory for reliable QSOs

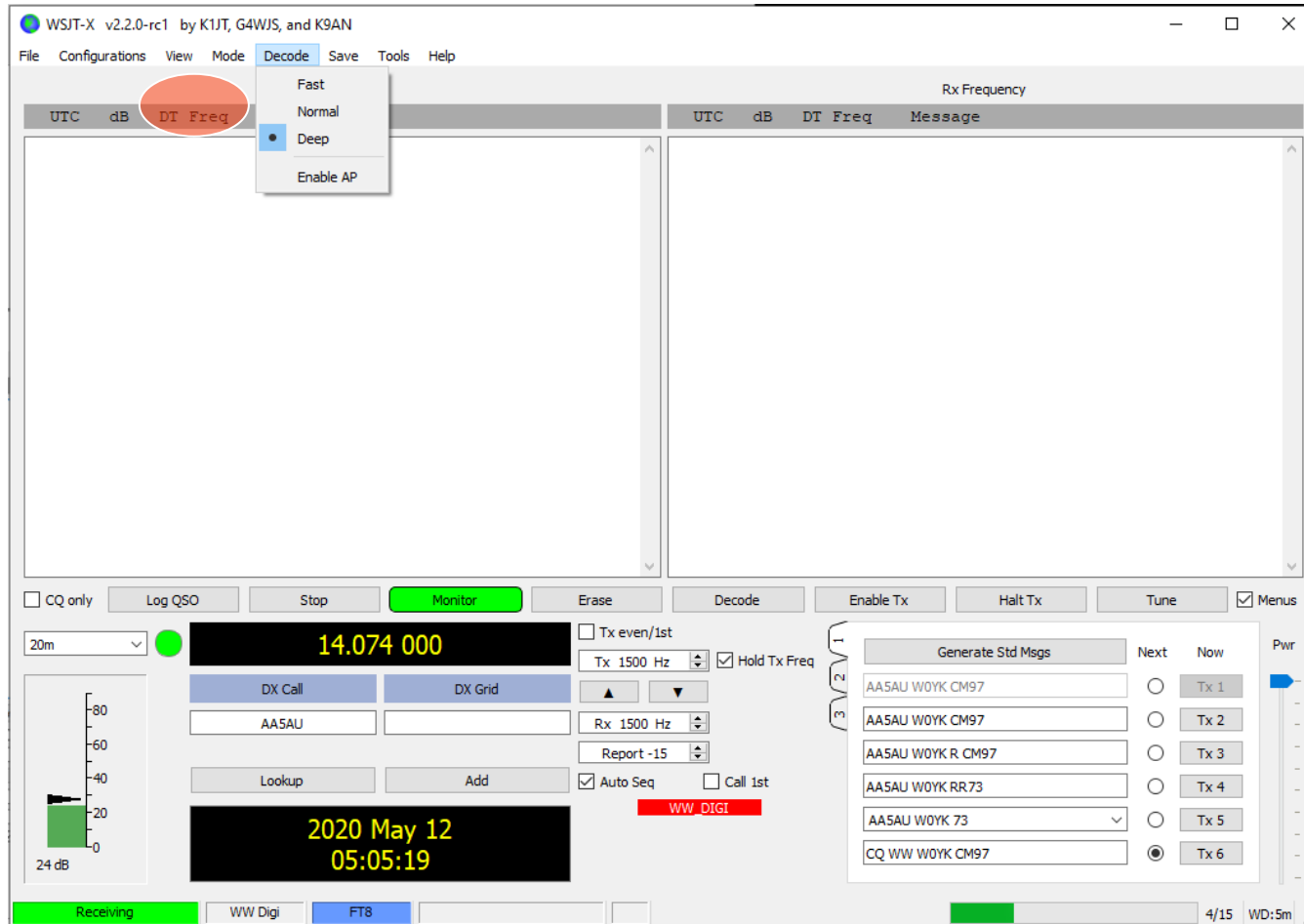


- **Windows Internet Time Sync**
 - Weekly updates
 - Can be unreliable
- **Alternatives (update often, e.g. hourly)**
 - Meinberg NTP (recommended by K1JT)
 - NetTime (recommended by W0YK)
 - Dimension 4
 - Atomic Clock Sync

Split Receive (lock transmit)



Deep Decode



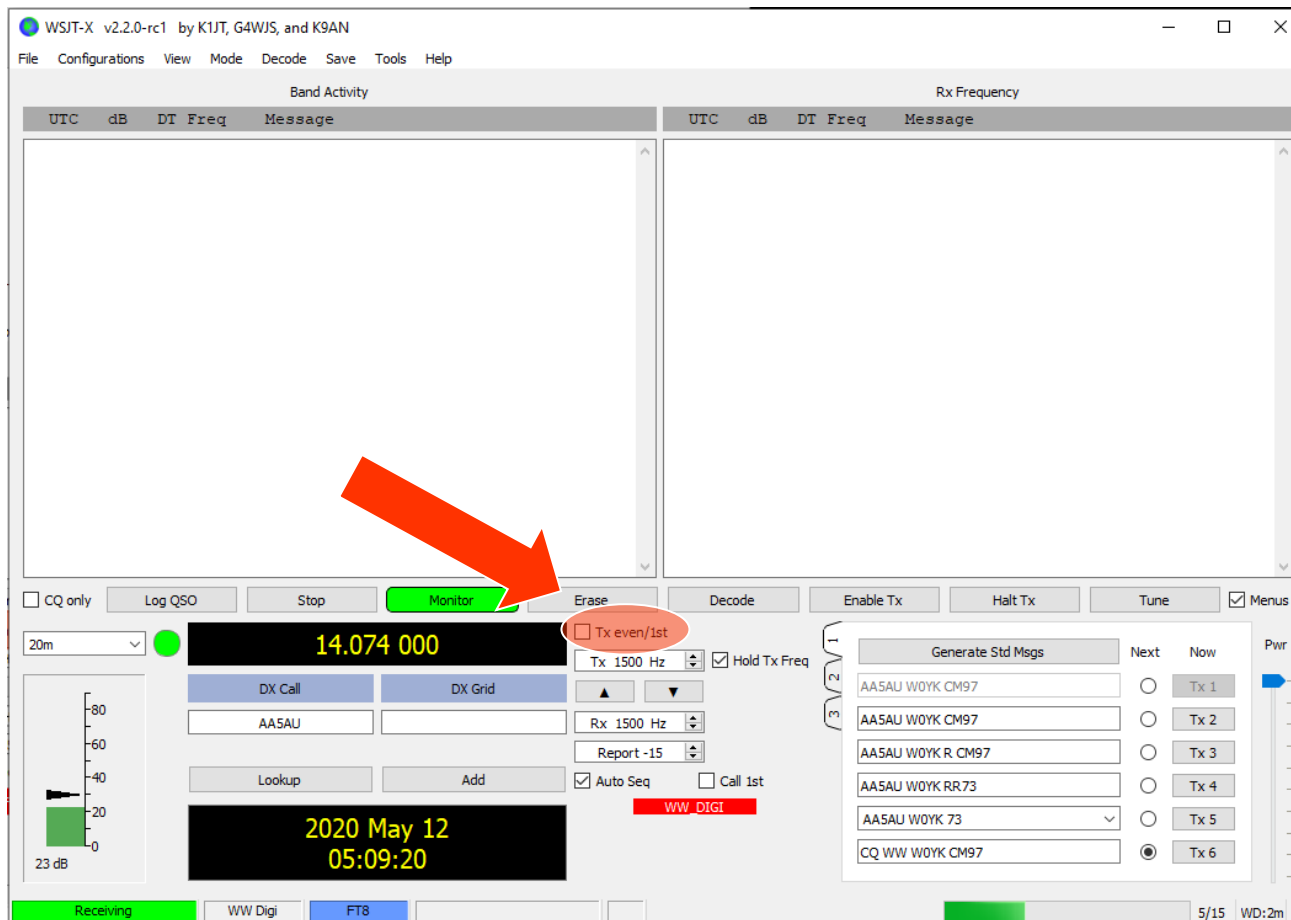
Sub-Band Choices

Int'l Digi, WW Digi, FT RU

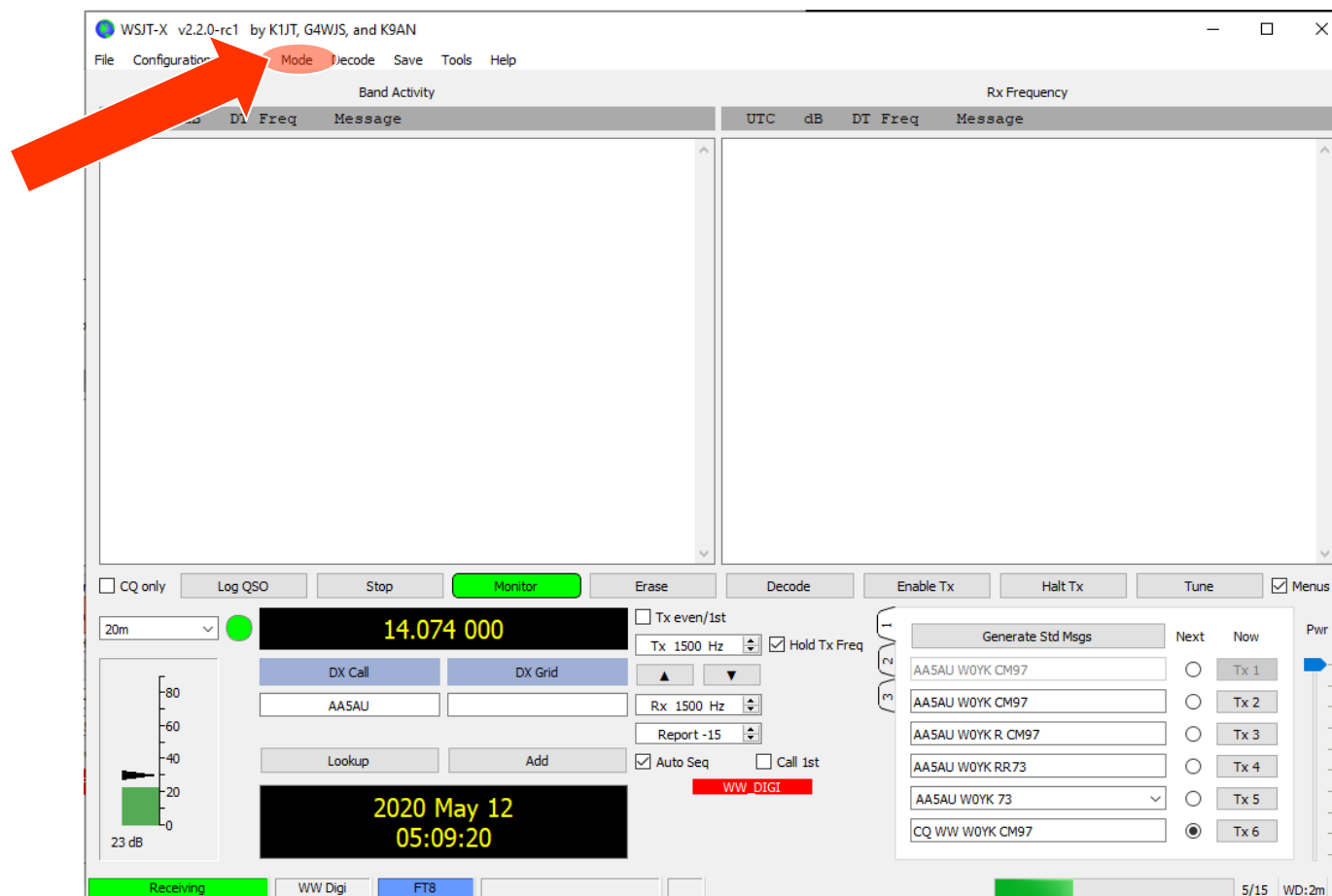


- **Suppressed-Carrier dial frequency**
 - FT4: xxx80 (*now the daily default*)
 - FT8: xxx90
- **Use receiver's maximum BW: 2.5-4 kHz**
- **QSO partner > 3 kHz ... call above 3 kHz**
- **Move dial frequency up in 3 kHz increments**

Rotate Odd/Even Cycles



Rotate FT4/FT8 Modes



FT Fill Protocol



CQ W0YK CM97

W0YK AA5AU EL92

AA5AU W0YK R CM97

W0YK AA5AU RR73

AA5AU W0YK R CM97

W0YK AA5AU RR73

←AA5AU calls with exch

← W0YK QSL's with exch

←AA5AU QSL's

← AA5AU "asks" for fill

←W0YK repeats QSL msg



Working Non-Contesters

Depends on Contest Exchange

- **SNR**
 - **FT Challenge**
- **Grid Square exchange (S&P only)**
 - **ARRL Int'l Digi, WW Digi**
 - **CQ answered with Tx2 instead of Tx1 → don't call CQ**
- **QTH, serial number, name, etc.**

Minimizing NILs

FT4 & FT8



- One QSO partner QSLs the QSL
- Implied by default WSJT-X logging behavior
- Defacto expectation
 - Many FT ops won't log the QSO without this superfluous QSL of the final QSL
 - Thus, NIL rate increases
 - CW, SSB & RTTY = 1-2%
 - FT = 5-6%

Minimizing NILs

e.g. WW Digi



- FT contest NILs are high
 - RTTY is 1-2%, FT is 5-6%
- QSO partners disagree on QSO completion
 - One doesn't log, the other logs (and, gets a NIL)

CQ W0YK CM97

W0YK AA5AU EL92

← AA5AU answers with exch

AA5AU W0YK *R* CM97

← W0YK *QSLs* with exch

W0YK AA5AU *RR73*

← AA5AU *QSLs* and W0YK logs the QSO

AA5AU W0YK 73

← AA5AU expects W0YK's 73 before he logs QSO

Minimizing NILs

QSO Requirements



- Each QSO partner sends:
 - Call sign
 - Exchange
 - QSL (one only!)

Minimizing NILs

CW, SSB & RTTY



- Each QSO partner QSLs the exchange **once**
- Context reduces uncertainty
 - Other station doesn't repeat their last message
 - Other station doesn't ask for a repeat
 - Other station rolls into their next QSO

WW Digi Alternative QSO

context



CQ W0YK CM97

W0YK AA5AU EL92

AA5AU W0YK R CM97

W0YK AA5AU RR73

CQ W0YK CM97

← AA5AU calls with exch

← W0YK QSL's with exch

← AA5AU QSL's

← W0YK calls CQ,

or

AC0C W0YK R CM97

← W0YK rolls into next QSO

*AA5AU then knows, by context,
that W0YK received his QSL message*

WW Digi QSO



CQ W0YK CM97

← W0YK call

W0YK AA5AU EL92

← AA5AU call & exch

AA5AU W0YK R CM97

← W0YK QSL & exch

W0YK AA5AU RR73

← AA5AU QSL

AA5AU W0YK 73

← W0YK QSLs AA5AU's QSL!

*This wastes time because W0YK could
have used the message to CQ or
answer another caller.*

Minimizing NILs

Recommendation #1



- **Develop skill to dynamically change message and send 73 message if needed**
 - Look for a clue that your message was not received, e.g., your QSO partner re-sends his report.
 - e.g., use the Alternate F1-F6 keys in WSJT-X
- **Always log the QSO when receiving an RRR, RR73 or 73 message.**
- **Always log the QSO when sending RRR, RR73 or 73 message.**

Minimizing NILs

Recommendation #2



- **Give in!**
 - Send the superfluous 73, but
 - Don't require it from your QSO partner
- **Yes, it's unnecessarily slower, but**
 - FT contesting is currently slow enough to absorb the extra message



FT8 vs. FT4 Strategy

- **FT4 is faster; FT8 decodes better**
 - **Intrinsic vs. extrinsic speed**
 - FT4 is intrinsically 2x the speed of FT8
 - FT8 is more likely to decode
 - Either might be extrinsically faster at a given time
 - **Dynamically choose the mode with:**
 - the highest QSO rate, or
 - the most multipliers
- **New stations & multipliers in each mode**
 - and, each cycle

Resources



- Thursday night practice
 - <https://www.ncccsprint.com/ft4ns.html>
- Software Email reflectors
 - wsjt-devel@lists.sourceforge.net (WSJT-X)
 - n1mmloggerplus@groups.io (N1MM Logger+)
 - digirite@groups.io (DigiRite)
 - writelog@contesting.com (WriteLog)
- Tutorials for WW Digi DX Contest
 - rttycontesting.com/tutorials/n1mm/operating-ww-digi-with-n1mm/ N1MM/WSJT-X
 - rttycontesting.com/tutorials/writelog3/digirite/ WriteLog/DigiRite
- Software web sites
 - physics.princeton.edu/pulsar/K1JT/wsjitx.html (WSJT-X)
 - n1mm.hamdocs.com/tiki-index.php (N1MM Logger+)
 - [https://writelog.com/digirite](http://writelog.com/digirite) (DigiRite)
 - www.writelog.com (WriteLog)